

Claims

1. ROLLING SCREW WITH SMALLER ADVANCE PER TURN THAN THE PITCH
OF THE THREADING, characterised in that a threaded
coupling is foreseen in which a screw is turned inside one
5 or more female screws (inserted in a single body or
sleeve) and where the pitch of the thread of said female
screws is equal to that of the screw whereas the nominal
diameter is greater than that of the screw itself, each of
the female screws consisting of a bearing, able to
10 simultaneously bear both radial and axial loads, with an
inner ring that has the threaded hole and where the axis
of said female screws is parallel, but not coinciding,
with the axis of the screw; in such a way, the contact
between the thread of the screw and the thread of each of
15 the female screws is realised, approximately at the
generating line of the respective cylindrical surfaces.
2. ROLLING SCREW, according to claim 1, characterised in that
the threaded inner hole of the female screw is formed on a
bush which, in turn, is fitted onto the inner ring of at
20 least one bearing.
3. ROLLING SCREW, according to claims 1 and 2, characterised
in that the female screws are not arranged coaxial to each
other.
4. ROLLING SCREW, according to claim 1, characterised in that
25 the screw (1) is inserted inside the sleeve (2), made up
of two half-shells (2a, 2b), kept joined together through
mobile connection members (3) in the sleeve (2), near to
the two bases, with the guide bearings (4) being inserted,
kept locked by the elastic rings (5); the screw itself is
30 inserted (but free to slide) on said bearings and in the
central zone of the sleeve (2) a bearing (6) is mounted,
of the type suitable for bearing axial loads, which has
its inner ring (7) with a threaded hole coupled with the
screw itself, said bearing (6), with a threaded hole,

being mounted eccentrically with respect to the axis of the screw (1) and with respect to the axis of the two guide bearings (4) of the screw itself, with it being foreseen that the threads of the screw (1) and the threads of the female screw, formed on the inner ring (7), come into contact with each other approximately along a generatrix of the threaded surface and not on the whole surface of the thread itself, with the rotation of the screw (1) about its own axis, the threaded inner ring (7) of the central bearing (6) also being made to rotate in the same direction as that of the aforementioned screw.

5. ROLLING SCREW, according to one or more of the previous claims, characterised in that the screw (1) is idle, whereas the threaded ring (7), applied to the female screw, is placed in rotation through a transmission system, which uses *per se* known means, such as belts and gears.

6. ROLLING SCREW, according to one or more of the previous claims, characterised in that the screw (1) is fixed, whereas the entire sleeve (2) is placed in rotation, through a transmission system, which uses *per se* known means, such as belts and gears.

7. ROLLING SCREW, according to one or more of the previous claims, characterised in that the use of two or more female screws contained inside the sleeve itself is foreseen.

8. ROLLING SCREW, according to one or more of the previous claims, characterised in that it is foreseen for there to be an absence of guide bearings inside the sleeve.

9. ROLLING SCREW, according to one or more of the previous claims, characterised in that it is foreseen that the female screws consist of internally threaded bushes fitted in the hole of at least one of the sliding or rolling bearings contained in the sleeve.

10. ROLLING SCREW, according to one or more of the previous claims, characterised in that it is foreseen that
- the screw and the female screw are equipped with synchronised movement, realised with any type of *per se* known synchronisation device.
11. ROLLING SCREW, according to one or more of the previous claims, characterised in that it is foreseen that a preload is applied on the screw, to realise an extremely precise movement and positioning of the rotating members to zero the tolerance clearance.
12. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees the application of a locking/unlocking system of the rotation of the bearing or of the bearings of the female screw to obtain, when the aforementioned bearings are locked, an advance per turn of the screw equal to the value of the pitch of its thread.
13. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees the application of a locking/unlocking system of the rotation of the screw to obtain, when it is locked, an advance per turn of the sleeve of a value equal to the pitch of the thread of the aforementioned screw.
14. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees the use of a "free-wheel" type device, which prevents the rotation of the bearing of the female screw in one of the two directions.
15. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees the use of a "free-wheel" type device, which prevents the rotation of the screw in one of the two directions.

16. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees a plurality of female screws that have diameters of different values.
- 5 17. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees that the female screws are susceptible to being placed in a condition not in contact with the screw, independently from each other.
- 10 18. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees that from the plurality of female screws, with different diameters, only a selected one can remain in contact with the screw, so as to obtain an advance per turn of the screw dependent upon the diameter of the specific female screw being used.
- 15 19. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees that the diameters of each of the female screws have a value such that when all of the aforementioned female screws are in the condition of detachment from the screw it is possible to make the screw slide freely on the guide bearings.
- 20 20. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees that the female screw is equipped with circumferential throats and with advance per turn equal to the threading value of the screw.
- 25 21. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees that the screw is equipped with circumferential throats and with advance per turn equal to the threading pitch of the female screw.
- 30 22. ROLLING SCREW, according to one or more of the previous claims, characterised in that it foresees that one or more female screws are replaced with externally threaded bearings.

23. ROLLING SCREW, according to claim 22, characterised in
that it foresees that the externally threaded bearings are
placed in contact with the screw, to obtain advances per
turn of a greater value with respect to the pitch of the
5 threading of the screw itself.

24. ROLLING SCREW, according to one or more of the previous
claims, characterised in that it is actuated through the
use of a motor reducer with low transmission ratio,
therefore reversible and, in situations of failure or lack
10 of energy, even able to be actuated manually.